Enabling Net-Centric Operations

DoD Chief Information Officer

THE CHALLENGE

The early days of the 21st century reinforced what the nation already was beginning to understand. We have entered an era of uncertainty. The challenges to national security and global stability will vary greatly. They will involve asymmetric operations, a wide range of partners, compressed timelines, world-wide visibility, and non-state enemies who seek to destroy our free way of life.

Succeeding in this new strategic environment requires levels of responsiveness and agility never before demanded of our forces. Our forces must move from a peacetime tempo, to a wartime sense of urgency. They must adjust to an era of surprise and uncertainty, and leave behind the reasonable predictability of the past. Given the uncertainties of the new era, we must be able to respond to crises, as well as be proactive and shape the future. Unlike the static defense and garrison forces of the Post Cold War, we must become accustomed to mobile, expeditionary operations. Most important, we must transform our emphasis on ships, guns, tanks, and planes, and instead focus on information, knowledge and timely, actionable intelligence.

"We must build forces that draw upon the revolutionary advances in the technology of war... one that relies more heavily on stealth, precision weaponry, and information technologies."

George W. Bush
Commander in Chief

In short, we must move from our Industrial Age mindset, and transform to a 21st century force. Our path lies in our ability to conduct Net-Centric Operations.

We will conduct network-centric operations with compatible information and communications systems, usable data, and flexible operational constructs

National Defense Strategy (2005)

THE RESPONSE

The Department of Defense has been and is transforming along a continuum that reflects the significant changes that have occurred since the end of the last century. It continues to transform to meet the new strategic environment.

Defense transformation hinges on the recognition that information is our greatest source of power. Information can be leveraged to allow decision makers at all levels across the Defense Team to make better decisions faster and act sooner. Ensuring timely and trusted information is available where it is needed, when it is needed, and to those who need it is at the heart of the capability needed to conduct Net-Centric Operations.

> *DoD's Transformation Planning Guidance "...depicts the outcome we must achieve: fundamentally joint, network-centric, distributed forces..."*
>
> **Donald Rumsfeld**
> **Secretary of Defense**

Transforming to Net-Centric Operations requires people, processes, and technology that work together to enable timely and trusted:
- Access to information,
- Sharing of information, and
- Collaboration among those involved.

Instead of "pushing information out" based on individually engineered and predetermined interfaces, Net-Centricity ensures that a user at any level can both "take what he needs" and "contribute what he knows."

The technological change will be significant, but the mental shift to this agile force may be even more challenging. Becoming a Net-Centric Force requires fundamental changes in process, policy, and culture across the Department (defense operations, intelligence functions, and business processes).

Timely and dependable information will be available across the Enterprise - from higher level headquarters and command centers, to a soldier in the city tracking insurgents, or a civilian in need of a new supplier. Ultimately, Net-Centricity means **Connecting People With Information.**

Over the past few years, we have made significant progress with the Information Age Transformation of the DoD. A significant impact on DoD's major management processes and on military operations is already being experienced.

The DoD is doing more than simply inserting information technology into the force. We are rethinking our organizations and the ways in which we operate. We are transforming from a traditional hierarchical command structure to a decentralized organization with new approaches to command and control. The Department is embracing joint processes that can improve the speed of command, reduce combat operations time, increase agility, and enhance mission effectiveness.

These capabilities save lives. Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) have demonstrated the value of sharing timely and trusted information. Commanders at all levels have created systems to exchange data, tactics, strategies, and a host of insights and lessons.

"The power of information has been key throughout this operation, and it is truly having the effect of saving lives."

**General Tommy Franks,
Operation Iraqi Freedom**

At the tactical level, information exchanges that identify new insurgent tactics, especially those concealing Improvised Explosive Devices, have saved lives. At the operational level, Joint Operations are significantly enhanced when forward ground reconnaissance assets can directly compare urban targets with airborne platforms carrying precision munitions. Finally, Commanders in higher headquarters have demonstrated the value of interoperable systems that net their staffs together regardless of time or location. The time spent on meetings and coordination has decreased, while the opportunity to collaborate and plan significantly has increased.

Ultimately, the power of information means lives saved.

The first five years of the new century have produced great strides in developing the critical enabling capabilities needed to conduct Net-Centric Operations. Across the Enterprise, progress has been made in achieving:

- Information Age Chief Information Officer (CIO)
- Bandwidth Expansion at 80+ DISN sites in support of the Global Information Grid (GIG)
- Information sharing strategies and policy
- Enterprise Wide System Engineering Strategy/Plan
- Key technology advances
- Information Assurance Component of the GIG Enterprise Architecture
- Portfolio Management policy and initial implementation
- Communities of Interest (C2 Space Situation Awareness, Maritime Domain Awareness, Global Strike)
- Global Strike Pilot capability demonstration
- Scholarship programs to grow new talent

Transforming to a Net-Centric Force requires fundamental changes in process, policy, and culture across the Department (defense operations, intelligence functions, and business processes).
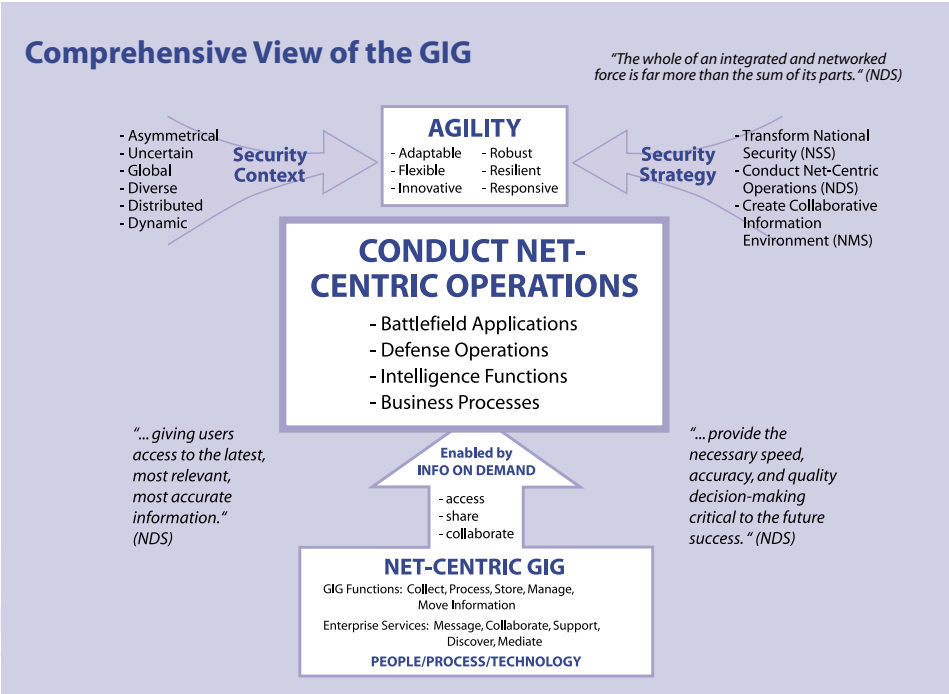
- Collaborating with industry and academia to pursue key technologies and systems
- Creating an information sharing space where users, services, information, and networks are co-resident
- Ensuring data is made visible, accessible, and understandable
- Securing individual data throughout its useful lifespan
- Establishing trust in network availability, participant identity, and data dependability and integrity across the Enterprise
- Managing the acquisition of systems and capabilities from a Joint perspective
- Exciting future talent to create a 21st century work force of Information Pioneers

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Our adversary is already networked. We cannot transform to a Net-Centric force if we merely maintain and expand the status quo. We cannot continue to patch stovepipes together in a world in which information demands are abundant, time lines are shrinking, and partners cannot be predicted. Our current "network" is made up of information silos that cannot talk to each other unless engineered to do so, cannot scale to the levels of interaction and interdependence we know will exist, and cannot accommodate the unknown and unknowable (what data, which partners, where it is put). If we maintain our current approach, we will prove to be fragile, not agile.

"...focus on providing the tip of the spear with the information and actionable knowledge to determine the best course of action."

**MG Peter W. Chiarelli
CG, 1st Cavalry Division**

Comprehensive View of the GIG

"The whole of an integrated and networked force is far more than the sum of its parts." (NDS)

AGILITY
- Adaptable - Robust
- Flexible - Resilient
- Innovative - Responsive

- Asymmetrical
- Uncertain
- Global
- Diverse
- Distributed
- Dynamic

Security Context

Security Strategy

- Transform National Security (NSS)
- Conduct Net-Centric Operations (NDS)
- Create Collaborative Information Environment (NMS)

CONDUCT NET-CENTRIC OPERATIONS
- Battlefield Applications
- Defense Operations
- Intelligence Functions
- Business Processes

"...giving users access to the latest, most relevant, most accurate information." (NDS)

"...provide the necessary speed, accuracy, and quality decision-making critical to the future success." (NDS)

Enabled by INFO ON DEMAND
- access
- share
- collaborate

NET-CENTRIC GIG
GIG Functions: Collect, Process, Store, Manage, Move Information
Enterprise Services: Message, Collaborate, Support, Discover, Mediate
PEOPLE/PROCESS/TECHNOLOGY

V1

What is NCO?

NCO is...	NCO is not...
Information users accessing what they need	Information providers deciding what users need
Robust networks without a central weakness	A centralized chain that can be cut or broken
An interoperable communication infrastructure	Multiple stove-piped communications infrastructures
More information, gathered in smarter ways	Totally restricted information
Doing more with the information that exists	Trying to contain the information that exists
Task, Post, Process, Use (TPPU)	Task, Process, Exploit, Disseminate (TPED)
Dynamic (situational) security	Fixed (domain specific) security
Self-synchronizing operations	Totally autonomous operations
Real-time collaboration	Best-time-possible hierarchical command
Pulling information down	Pushing (broadcasting) information out
Bandwidth as needed	Bandwidth constrained
Cycle time in seconds	Cycle time in hours
Risk management	Risk avoidance
Packets	Circuits

Net-Centric Operations (NCO) is the military's transformation to the Information Age. NCO envisions a robustly networked force that shares information by means of a global, secure "infostructure." Sharing information and collaboration greatly enhances shared situational awareness, which in turn enables self-synchronization and more effective operations.

www.dod.mil/cio-nii